

# cleanupdate

U.S. DEPARTMENT OF ENERGY/BROOKHAVEN NATIONAL LABORATORY/ASSOCIATED UNIVERSITIES INC.

THE OFFICE OF ENVIRONMENTAL RESTORATION — VOL. 1/NO. 4/WINTER 96-97



Water main installation under way in Manorville.

## Community concerns voiced at Manorville public meeting

Residents' concerns over the extent of the proposed public water hookup area in Manorville dominated the November 13 public meeting, as Brookhaven National Laboratory's Office of Environmental Restoration personnel explained the preferred remedy for groundwater contamination in the Manorville area.

More than 100 area residents attended the meeting, held at the Dayton Avenue School in Manorville. Office Manager Bill Gunther presented an overview of the Lab's environmental restoration program and Project Manager Mike Hauptmann gave a history of ethylene dibromide (EDB) contamination south of the Lab's southern boundary (Operable Unit VI). Mr. Hauptmann also outlined the U.S. Department of Energy, U.S. Environmental Protection Agency and N.Y.S. Department of Environmental Conservation's preferred remedy for the contamination, which includes public water hookups and continued

monitoring. Residents were encouraged to express their concerns and ask questions.

EDB has been found in groundwater in an undeveloped area of Manorville at concentrations as high as 3.5 parts per billion. The New York State drinking water standard is 0.05 parts per billion. EDB, once commonly used as an agricultural pesticide, is located approximately 1,000 feet west of Weeks Avenue and 500 feet south of North Street, 90-130 feet below land surface, and is projected to stay west of Weeks Avenue as it continues to move south. It is expected to dilute and degrade over the next 20 years, eventually reaching non-detectable levels.

After evaluating four potential remediation alternatives, the Department of Energy and Brookhaven National Laboratory have proposed public water hookups with monitoring and natural attenuation and dilution as

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## Looking at '96, planning for '97

A message from Bill Gunther, Manager, Office of Environmental Restoration

The past several months have seen significant advances in the environmental restoration program at Brookhaven National Laboratory. During the summer, we worked hard to continue to move the program from an assessment and investigation phase to one of active remediation. This involved design and construction of cleanup systems as well as the conduct of several pilot studies to determine the effectiveness of innovative cleanup technologies at the Lab site.

### Cleanup Systems

- Continuing our program of eliminating potential sources of contamination, the capping of the "Former Landfill" was completed this fall. The caps over the two inactive landfills will prevent further migration of any remaining waste products located within. Monitoring wells located at and around the capped landfills will be sampled and analyzed on a regular basis to ensure the proper performance of the cap.

- Construction of two pump-and-treat systems was initiated this summer. These systems will clean up groundwater contamination while preventing contaminated groundwater in the area from traveling off-site. We expect to begin operation of one of the systems this month, and the second by June 1997.

- The design of a system for cleaning the remaining soil and

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## inside

"Superfund in America"  
**See Pages 6 and 7**

## OER updates WWW page

The Office of Environmental Restoration's updated World Wide Web site is now on-line.

The site now provides more information about on-going and completed cleanup activities and provides residents with other news and event dates. Whether you want to know how to find specific documents related to Superfund activities at the Lab, or want to know how to reach other health and environmental agencies, the new Website is a good place to start the search.

To access the site, just type in the Office of Environmental Restoration's Internet address: <http://www.oer.dir.bnl.gov/~oer>. You can also find the site via the Brookhaven National Laboratory home page: <http://www.bnl.gov>.

## Pilot study tests 'sparging'

At Brookhaven National Laboratory, engineers often conduct pilot studies to test new environmental remediation technologies. One pilot project undergoing evaluation for potential use is "in-well air sparging," a system that removes volatile organic compounds from groundwater.

The in-well air sparging system works by injecting compressed air underground into a well. The pressure of the air flow lifts the water higher into the well causing air bubbles to form. During this process, the contaminants are drawn to the air and become trapped in the rising bubbles. The volatile organic compounds then evaporate into the air at low concen-



*This logo will soon top the new Office of Environmental Restoration Web page.*

trations. The clean water is then returned to the ground.

The benefit of using this system to remove contaminants from groundwater is that no complex pumps or controls are necessary. For example, no air stripping stack or recharge basin is needed. This means that the in-well air sparging system can be easily installed and operated, resulting in more efficient and flexible cleanup of the groundwater.

To determine the effectiveness of the air sparging system at Brookhaven National Laboratory, groundwater and air samples were collected during a five-week test period. Environmental engineers are currently evaluating all samples and the results will be reviewed by the U.S. Department of Energy, U. S. Environmental Protection Agency and N. Y. S. Department of Environmental Conservation.

## DOE announces 'ten-year plan'

The U.S. Department of Energy's Environmental Management Program is challenging itself to clean up its sites, including Brookhaven National Laboratory, within the next 10 years.

While the Department of Energy has recently made significant progress in conducting its cleanups more efficiently, there is increasing concern over whether the department can sustain U.S. Congressional and public support of the current program. Nationwide, this program currently stretches beyond 70 years at a cost of approximately \$200 billion.

The new program, described in the document entitled "The Ten Year Plan," will be the guiding document for each sites' cleanup activities. As such, these 10-year plans will drive budget requests, schedules, and the Department of Energy's actions through 2006 to expedite environmental management and cleanup work.

The Department of Energy is in the process of drafting this document and will make the Brookhaven National Laboratory portion available for public comment sometime during February or March. Stakeholders will be notified when and where this document will be available for review. Direct any questions to Angela Harvey, Department of Energy manager of BNL's Environmental Management Program, at 516-344-5345. ■

**cleanupupdate** is a quarterly newsletter from the Office of Environmental Restoration at Brookhaven National Laboratory. *cleanupupdate* is part of an on-going effort to inform the public about environmental restoration issues and activities at the Lab. If you are not on the Office of Environmental Restoration mailing list and would like to be, or if you have any questions about the cleanup, please contact:

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# 'Soils' remedy anticipated during 1997

During 1997, the U.S. Department of Energy is expected to propose a preferred remedy for radiologically contaminated soils, beginning the final step in the remediation process.

Scheduled for a summer release, the "Proposed Plan" will summarize a preferred remedial option and other alternatives considered in the "Feasibility Study" for addressing radiological soil contamination in the southeastern portion of the Lab (Operable Unit I) and other site locations. It follows a "Remedial Investigation," completed in June 1996, and begins the decision-making portion of the Superfund process. When the plan is completed, a public meeting and comment period will be scheduled to inform and solicit input from the general public, and also to address any concerns it might have.

## Choosing the Remedy

After all comments are considered, a final remedy for the area will be chosen and recorded in a document called the "Record of Decision." Following

that step, actual remediation of the area will begin.

Most of the radiologically contaminated soil on-site is at the Hazardous Waste Management Facility. This facility has been the central receiving, storage and processing area for the Lab's hazardous and radioactive waste since 1947. It is expected to be the principal focus of soil remediation activities. The area is controlled, fenced and monitored.

The existing Hazardous Waste Management Facility will be replaced this spring by a new, state-of-the-art waste handling facility now in the final stage of construction in the northeast part of the Lab's central portion.

Other low-level contaminated soils have been found near the center of the site, a developed area consisting of buildings, roads and parking lots. Lab activities in the area are not thought to be the source of this contamination. These soils were probably contaminated in the late 1950s by accidental spills at the Hazardous Waste Management Facility,

then moved to the Former Landfill. Later, the soils were taken from the landfill and used as landscaping fill in several locations.

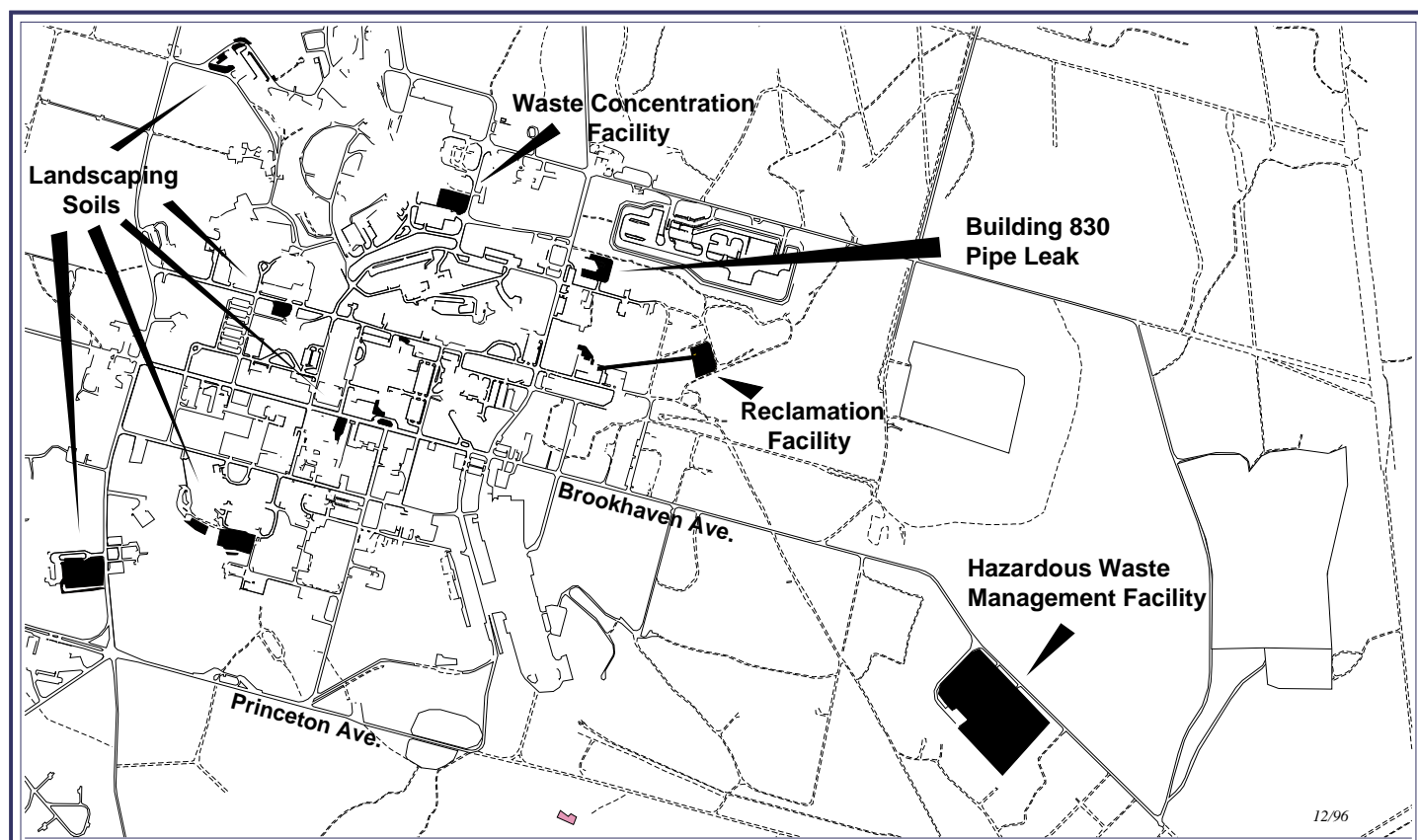
## Groundwater Not Threatened

The landscaping soils contain relatively low levels of cesium-137. These soils do not present a hazard to the health of Lab employees or the public. Because cesium-137 binds to soil particles, it does not present a threat to groundwater.

Low levels of contamination have also been found near the center of the site at the Waste Concentration Facility, where several liquid radioactive waste storage tanks were removed in August 1994, and in a sump outside a building where radioactive clothing and equipment were decontaminated.

The Proposed Plan also addresses several areas where removal and remediation actions are already completed or under way. These include the "Current" and "Former" landfills (see story, page 4), groundwater con-

*(continued on page 12)*



This map shows locations of radiologically contaminated soils in the Lab's central area.



1: Before capping began, the landfill resembled a grassy field.



2: A bulldozer grooms sand into a gentle slope over the landfill.



3: Workers lay the geomembrane over the groomed sand.



4: Grass is planted by a process called "hydro-seeding."

# BNL's oldest landfill

The capping of Brookhaven National Laboratory's oldest inactive landfill, known as the Former Landfill, has been completed. This is the second landfill to be capped in the past year.

The Former Landfill is located in the southeast portion of the Lab. It was originally operated by the U.S. Army for waste disposal from the beginning of World War II until the Lab

was established in 1947. After that time, the Lab continued to use a portion of the landfill for general waste disposal until it was closed in 1966. The Former Landfill received some low-level radioactive wastes between 1953 and 1966.

Capping is a remediation method that seals a landfill from the top so that precipitation cannot filter through the landfill contents and

leach contaminants into ground-water.

In the first step of this process, a fabric liner is placed over the surface of the landfill and covered with 12 inches of sand. Gas venting pipes are then placed in an upright position throughout this layer to prevent methane gas buildup under the cap.

In the second step, a 40 mils thick geomembrane cap, made of poly-

# receives a 'geo cap'

ethylene, is laid over the first 12-inch layer of sand. This cap prevents rain-water from reaching, and then percolating through, the landfill. The third step involves the application of a 24-inch layer of soil over the cap to protect it from frost action, root penetration, or physical damage.

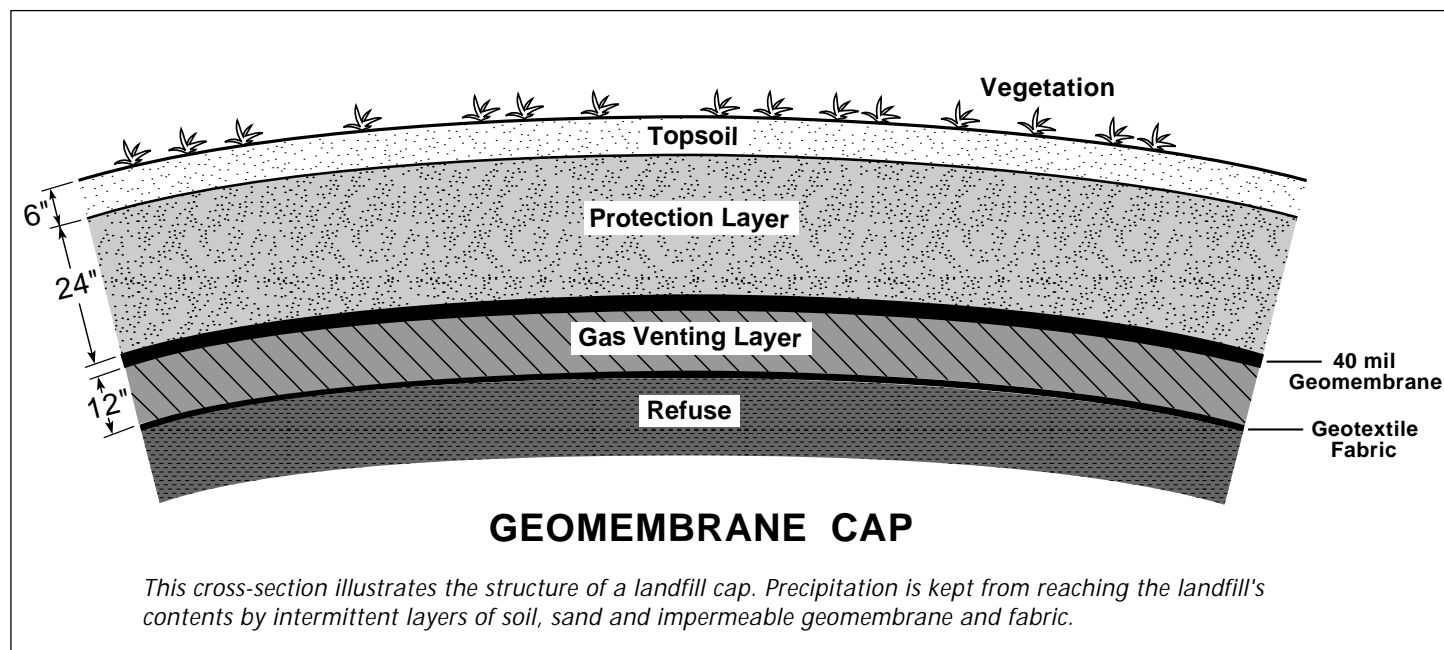
Finally, a six-inch layer of topsoil is applied and seeded with grass to

prevent soil erosion. The landfill cap is designed so that precipitation will run off into designated drainage areas without ever reaching the cap. To stabilize the side slopes that are created during the capping process, biodegradable erosion blankets are also applied. They hold the soil in place until the grass cover can take root.

To ensure that capping remains effective, cap maintenance, long-term

groundwater monitoring, and methane gas monitoring programs have been established.

Plans for a number of recreational uses are underway for the finished site. ■



5: When work was completed, the landfill once again resembled a grassy field.



# Superfund In America

While many Long Island residents know that Brookhaven National Laboratory is a Superfund site, few understand the meaning, the scope, and the process by which a site is identified, investigated and remediated.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund law) was passed by the U.S. Congress in December 1980, revised substantially in 1986, and re-authorized in 1990 and 1993. The law created a process to be used for the remediation of inactive or abandoned hazardous waste sites where contamination could pose a threat to public health or the environment. It also placed a special tax on oil and chemical companies and other polluting industries to build up a multi-billion dollar trust to fund the program.

In 1985, after the tax was in effect for five years, the Superfund program began with \$1.6 billion in the trust fund. The fund is used primarily when those companies or people responsible for contamination at Superfund sites cannot be found, or cannot perform or pay for the cleanup work. When a site is owned or operated by a federal agency, like the U.S. Department of Energy, that agency is responsible for all cleanup costs. Thus, the cleanup here at the Lab is being funded by the Department of Energy, not the Superfund trust fund.

### Superfund Goals

The Superfund program is overseen by the U.S. Environmental Protection Agency, and has four basic goals:

- It establishes a system for identifying hazardous substances and listing contaminated sites on the Environmental Protection Agency's National Priorities List. Sites are placed on this list when they are found to contain contaminants that have the potential to affect residential areas or impact the environment.
- It gives the federal government the authority to remediate a site if the owner or operator cannot be found or does not do the work themselves.
- It sets up a trust fund to pay for these activities by imposing a tax on chemical and petroleum companies and other polluting industries.
- It makes persons or parties responsible for hazardous releases liable for costs and damages resulting from those releases.

Over the past 11 years, 27,850 sites across the U.S. have been investigated by the Environmental Protection Agency for possible contamination, and 12,781 are still undergoing Superfund actions of some kind. Thousands of sites were dropped after no contamination

was found, while others were placed on the National Priorities List for further investigation.

The National Priorities List is a published list of hazardous waste sites eligible for extensive, long-term cleanup action under the Superfund program. As of June 1996, this list contained 1,227 sites, including BNL and 153 other federal facilities. The remaining 1,073 sites belong to the state or local government, or are privately owned. Remediation projects have been completed at 353 sites. The New York, New Jersey and Connecticut area includes 201 National Priorities List sites. There are 20 National Priorities List sites on Long Island (see illustration, page 8).

The Superfund process begins with an initial screening of a suspect site, a process known as a preliminary

assessment, a review of historical data to determine if further investigation is warranted. If necessary, this is followed by an Environmental Protection Agency site inspection, an on-site investigation into whether there is a release or potential release of contaminants into the environment. At this time, the site can be scored, using a process known as the Hazard Ranking System, to determine whether it should be included on the National Priorities List.

### The Hazard Ranking System

The Hazard Ranking System considers the relative threat to public health and the environment, using data from the earlier investigations to assign each site a score ranging from zero to 100. The score is based on the

### EPA Criteria

As part of the Superfund process, the U.S. Environmental Protection Agency established nine criteria, which are used to determine a remediation alternative. The first two criteria must be met and the remaining seven are given critical consideration.

1. Overall protection of human health and the environment
2. Compliance with federal and state environmental regulations
3. Long-term protection of human health and the environment
4. Reduction of toxicity, mobility or volume of waste
5. Short-term protection of human health and the environment
6. Technical feasibility
7. Cost
8. State acceptance
9. Community acceptance

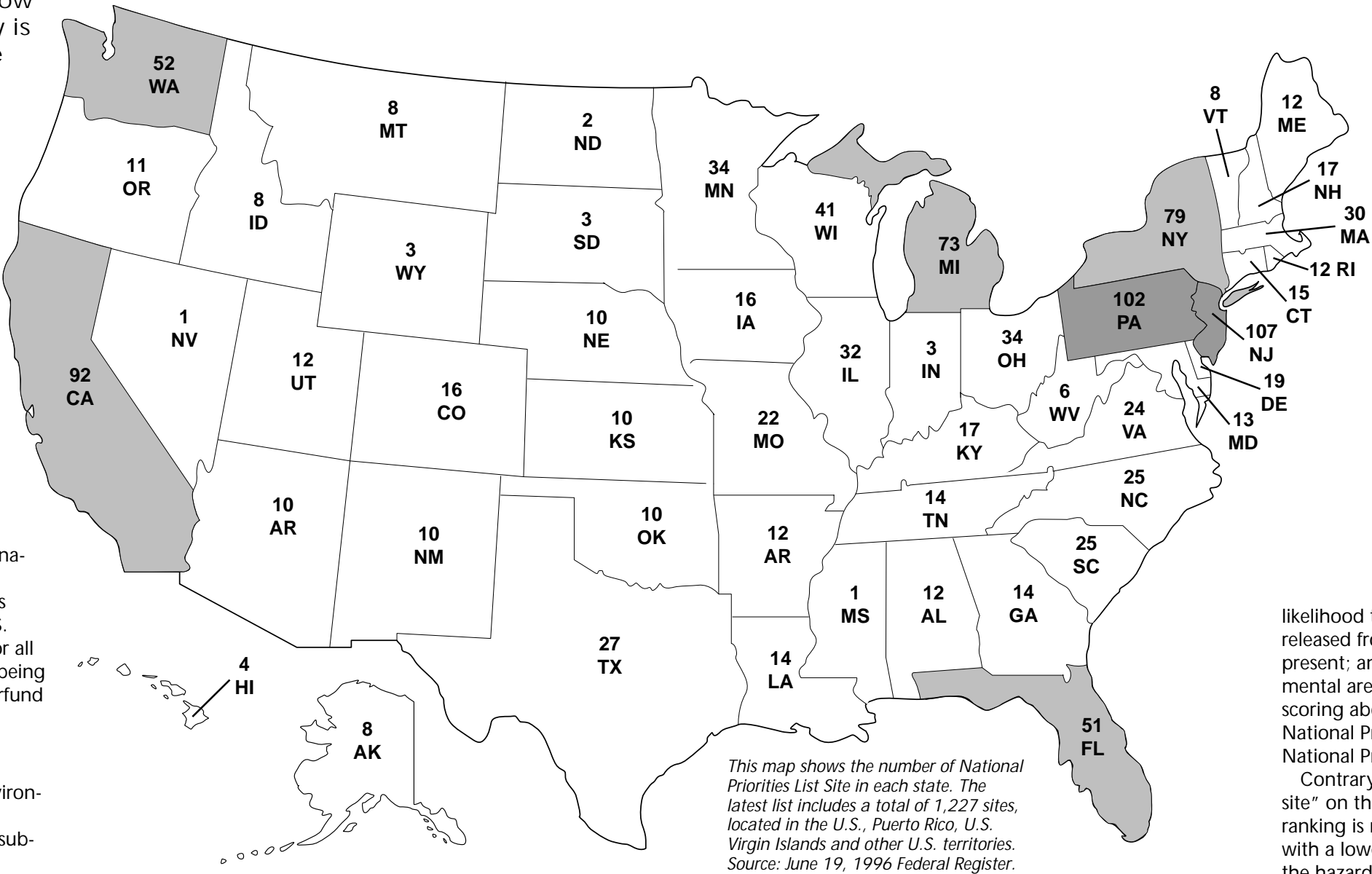
likelihood that contaminants have been or will be released from the site; the types of contaminants present; and the human population or sensitive environmental areas that could be impacted by a release. Sites scoring above 28.50 are eligible for placement on the National Priorities List. The Lab was placed on the National Priorities List in 1989. The Lab's score is 39.92.

Contrary to popular belief, there is no "most polluted site" on the list, and a site with a higher hazard ranking is not necessarily "more contaminated" than one with a lower score. While it is a measure of relative threat, the hazard ranking is based on a formula that allows the score to be high even if just one pathway (air, groundwater, surface water or soil) score is high.

As a result, a moderately contaminated site that impacts air, soil and groundwater pathways could have a score similar to an extremely dangerous site that poses a threat through only one pathway (e.g., deeply buried, leaking hazardous waste storage drums that threaten drinking wells but have no impact on the other three pathways).

In addition, the formula takes into account requirements established by Superfund law, Environmental Protection Agency policy decisions, and risk assessment principles. Because these relationships are complex and non-linear, hazard rankings do not imply, for example, that a site with a score of 70 is a greater threat than a site with a score of 50, or that two sites with equal scores should have equal priorities for further action.

(continued on page 8)



## Superfund *(continued from page 7)*

Following placement on the National Priorities List, the lead agency (in the Lab's case, the Department of Energy) conducts a remedial investigation to collect data and determine the nature and extent of contamination. This investigation includes sampling and monitoring of air, water and soil, and is conducted in conjunction with a risk assessment, which quantifies current risks to public health and the environment.

After the remedial investigation is completed or under way, a feasibility study is done to develop a host of remediation options. These options are then evaluated against nine Environmental Protection Agency criteria to determine which will be most protective of human health and the environment. (see EPA's nine criteria, page 7). This process and explanation of the "preferred" alternative is described in detail in a document called the "Proposed Remedial Action Plan."

### The Community's Role

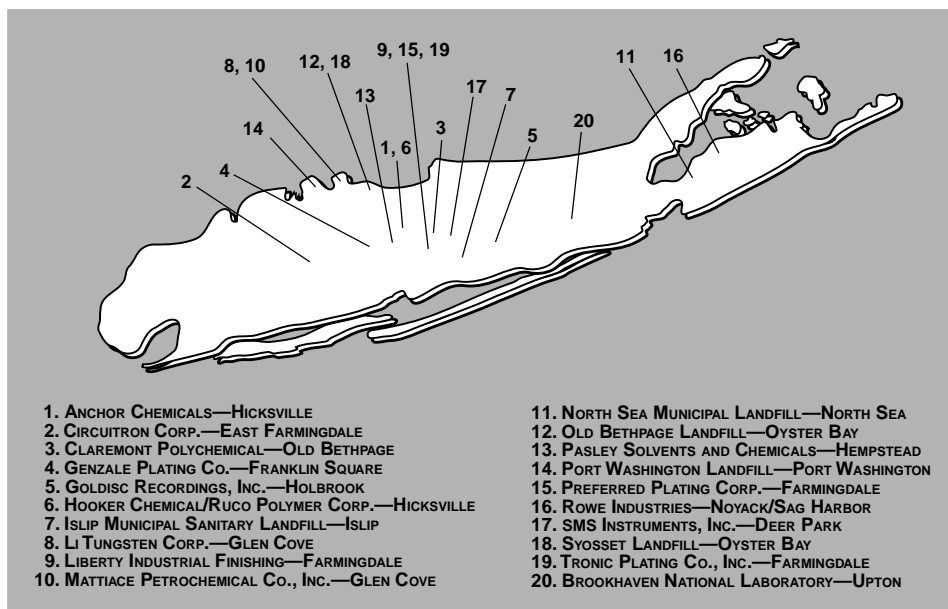
While public participation is encouraged throughout the process, this is a key point in time for public input. Area residents and the general public are encouraged to ask questions and express concerns during a public comment period and at a public meeting. These comments, as well as the Department of Energy's response to them, are included in a report called the "Responsiveness Summary."

At this point, the U.S. Environmental Protection Agency and other regulatory agencies overseeing the process select what they believe is the most appropriate option, taking into account public concerns, which are finalized in a legally-binding document known as the "Record of Decision."

The next step is the remedial design, which sets out the detailed plans and specifications for remediation. The final step is the remedial action, or actual construction and implementation of the selected option.

### Special Actions

At any point in this process the regulatory agencies can expedite cleanup through a removal action or interim remedial action. These actions, such as capping, pump-and-treat, and public water hookup, are performed as



*This map shows the approximate location of National Priorities List sites on Long Island.  
Source: June 19, 1996 Federal Register.*

quickly as possible to eliminate a potential threat to human health or the environment.

The Brookhaven National Laboratory site includes a number of areas where past practices or accidents have resulted in suspected or known contamination. To date, 28 "areas of concern" have been identified on-site and grouped into six geographical areas known as "operable units." Thirteen projects are completed or under way. Several of these projects are described in detail elsewhere in this issue.

Under Superfund law, all of the documents listed above, once each is completed, become part of the "Administrative Record" for the site. This "Administrative Record" is available for public review at information repositories. The Lab's "Administrative Record" can be found at the Longwood and Mastic-Moriches-Shirley public libraries, the BNL research library and the U.S. Environmental Protection Agency Region II library in Manhattan (for locations, see below). ■

### Libraries — All reports generated by BNL's Office of Environmental Restoration are available at these libraries:

Longwood Public Library  
800 Middle Country Road  
Middle Island NY 11953  
516-924-6400  
e-mail:  
helpdesk@suffolk.lib.ny.us

Mastics-Moriches-Shirley  
Community Library  
301 William Floyd Parkway  
Shirley NY 11967  
516-399-1511  
e-mail: hickling@suffolk.ny.us

BNL Research Library  
Building 477A  
Brookhaven Avenue  
Upton NY 11973  
516-344-3483  
WWW: <http://www.bnl.gov>

U.S. EPA Region II Library  
Administrative Records Room  
290 Broadway  
New York NY 1007-1866  
212-637-4296

## Message *(continued from page 1)*

groundwater contamination at our Central Steam Facility area is 90 percent complete. Final approval of the design is expected from the regulating agencies (U.S. Environmental Protection Agency and the N.Y.S. Department of Environmental Conservation) in the next few months.

### Pilot Studies

The Office of Environmental Restoration staff undertook several pilot studies this summer, including in-situ vitrification, bioremediation, in-well air sparging, and phytoremediation.

- Phytoremediation involves using plants to help clean soils contaminated with radiological contaminants. Several types of grasses and mustard plants were tested and found to absorb some of the contaminants through their root system. The plants were harvested, analyzed, and will be disposed of as low level radioactive waste. The practicality of this and other cleanup technologies continues to be evaluated.

- In-situ vitrification, tested this past spring, uses a strong electrical current to melt soil and any adjacent waste products into a stable, glass-like form. This technology is being evaluated for use in two areas of the site.

- One of the pilot studies that showed promise was a technology called in-well sparging. This technology involves the

use of air injected into a well to remove solvent contaminants from the groundwater (see story, page 2). As the data from this test are evaluated and reviewed, we will be able to determine if this technique will be cost-effective in supplementing the pump-and-treat systems to achieve our groundwater cleanup goals.

### Funding Limitations

In the past two years, Brookhaven National Laboratory has been fortunate to receive additional funds from the Department of Energy to help expedite restoration program projects and provide public water hookups to our neighbors who could have been impacted by groundwater contamination coming from the Lab. This year, however, funding is projected to be approximately 25 percent lower than what had been anticipated.

Because our highest priority is groundwater remediation, we will continue on schedule with the pump-and-treat systems. Some other project activities will be deferred until funding becomes available.

These delays do not represent a threat to public health or the environment. The U.S. Department of Energy and Brookhaven National Laboratory will continue with the preparation and planning for these activities so that as funding becomes available we can move ahead quickly. ■

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## Meeting *(continued from page 1)*

the preferred remedy for the area. This remedy has been selected as the most protective of human health and the environment, preventing any future residential exposure to EDB-contaminated groundwater.

Though the ethylene dibromide from The Lab has not impacted any residential wells, the Department of Energy authorized the Suffolk County Water Authority to begin public water hookups in the Weeks Avenue/North Street/South Street area of Manorville. The water authority has installed mains, and about 95 homes will be connected to public water over the next few months, weather permitting (see *hookupdate*, page 10).

### Fielding Questions

After 40 minutes of Lab presentations and a brief video, the floor was opened for a two-hour question-and-answer session. On hand to field questions from the public were representatives from several agencies, including the Department of Energy, Environmental Protection Agency, Agency for Toxic Substances and Disease Registry, Department of Environmental Conservation, N.Y. S. Department of Health, Suffolk County Department of Health Services and

Suffolk County Water Authority. Discussion ranged from health concerns to property values.

The most frequent comments came from residents who live outside the boundaries of the proposed hookup area. Several Dayton Avenue and south Weeks Avenue residents asked the Department of Energy to extend the hookup area to include their homes, stating they were concerned that contamination could eventually reach their wells. Prior to determining the final remedy, the Department of Energy will review and respond to the comments and concerns received during the public comment period and at the public meeting. These responses will be reflected in a document called the "Responsiveness Summary," due to be completed by April 1997. The final remediation decision will be documented in a "Record of Decision," which is also expected to be completed by April 1997.

Mr. Hauptmann, explaining the rationale for defining the proposed hookup area, showed that even in the most conservative computer-modeling scenario there is little chance that contamination would reach these homes, based on known direction of groundwater flow and the concentrations of EDB

that have been found. In addition, long-term sampling of on- and off-site monitoring wells will track the EDB to make certain it is moving and degrading as expected.

### Monitoring Planned

If monitoring shows otherwise, the Department of Energy is prepared to act as is necessary to protect human health. In addition, the Environmental Protection Agency's Mary Logan told residents, the existing system of checks and balances means that several agencies (Department of Energy, Environmental Protection Agency and the Department of Environmental Conservation) will be reviewing the data as they are gathered. This review is part of the preferred remedy, as is a state condition requiring the expansion of the hookup area if it is deemed necessary.

Two reports describing the remediation alternatives are now available at local repositories. (for locations, see page 8). These documents, whose public comment period was from October 3 through December 6, 1996, are the "Operable Unit VI Focused Feasibility Study" and the "Operable Unit VI Proposed Remedial Action Plan." ■

## North Shirley

The U.S. Department of Energy reports that the Suffolk County Water Authority has connected 709 homes to public water in North Shirley area. Between 750 and 800 homes are eligible for hookup.

To ensure that all eligible individuals receive public water, the Department of Energy is conducting a title search on properties that have not already responded. Anyone who is eligible, but has not yet applied, should contact the Suffolk County Water Authority as soon as possible to obtain an application.

The goal is to complete hookups by December 31, 1996. Depending on weather conditions, some of the restoration work may need to be delayed until spring. This could include a final coat of asphalt, concrete work, and reseeding of grass or replacement of sod.

The Department of Energy expects contractors to return all properties to their original condition. Homeowners concerned about having their property restored to its original state are encouraged to take photographs "before" and "after" connection work. Individuals should also know which contractor did the work and the date work was done.

During November, the Department of Energy received several complaints about settling of soil used to backfill water line excavations. The Suffolk County Water Authority is responding to this problem as quickly as possible. However, hookups remain the first priority.

"Once the hookups are completed, the effort will focus on filling the holes," said Rich Freeman, the Department of Energy's project manager. "Holes will be filled sooner if the settling has resulted in a potential threat to the safety of individuals walking in the area."

## Manorville

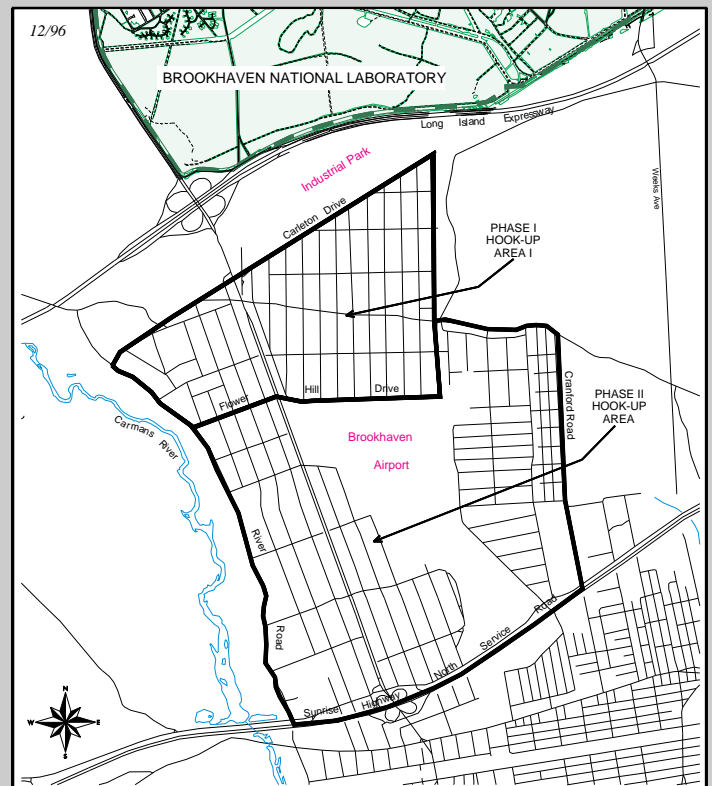
Work is also progressing in the upper Weeks Avenue, North Street and South Street areas of Manorville, where about 100 homes are to be hooked up.

The latest Suffolk County Water Authority information(as of the week ending December 17) on the hookup project in this area reports:

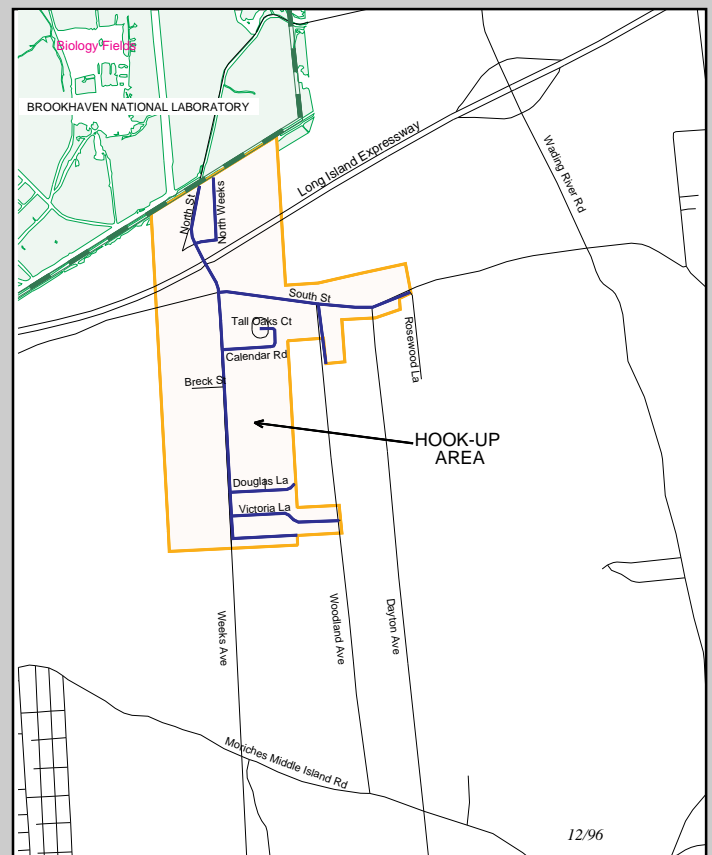
- all water mains have been installed;
- 87 house service lines are complete;
- 23 taps are complete (connection of water main to house service line).

## Questions or concerns?

Anyone with questions or concerns regarding quality of work should contact the Suffolk County Water Authority at 516-288-1034. General questions or issues regarding the performance of the Water Authority should be directed to Rich Freeman of the U.S. Department of Energy at 1-800-369-6976.



The North Shirley hookup area.



The Weeks Avenue, North Street and South Street hookup areas.



# First of two pump-and-treat systems now operational

Two pump-and-treat systems are planned at Brookhaven National Laboratory's south boundary. Both systems include the installation of groundwater extraction wells. The water will be pumped back to the central portion of the Lab where it will be treated and discharged. Pump-and-treat is being installed to treat groundwater contamination and to prevent further migration off-site.

The first system, expected to be operational by the end of 1996, is located near BNL's southeast boundary within Operable Unit I. The sources of this groundwater contamination are the Current Landfill and the Hazardous Waste Management Facility.

The second system, located within Operable Unit III, is approximately 3000 feet west of the Operable Unit I system. It is scheduled to start up in June, 1997. Work has started on the installation of the electric distribution system, access road and water piping. Construction of the treatment system and well installations will be completed in the spring of 1997. The source of this contamination is being investigated.



*The air stripper (left) connects to the stack (right) when construction is complete.*

Pump-and-treat works by extracting contaminated groundwater and pumping it to an "air stripping" facility where volatile organic compounds are separated from the water. The clean water is then recharged (returned to the ground) and the volatile organic compounds are released into the air via an air stripping stack at a concentration that is below state and federal emission standards.

To ensure that the pump-and-treat system is working effectively, groundwater monitoring wells will be sampled and analyzed regularly. The U. S. Department of Energy, the U.S. Environmental Protection Agency and the N.Y. S. Department of Environmental Conservation will oversee all monitoring.

Brookhaven National Laboratory and the U.S. Department of Energy expect the pump-and-treat system to operate from seven to 12 years before design goals are met. At that time, the system will have reduced the contamination to such low levels that no further remediation is practicable. Any remaining groundwater contamination will be remedied by the natural processes of degradation and dilution over time. ■

## 'Responsiveness Summary' release expected soon

A report summarizing the U.S. Department of Energy's response to public comments concerning groundwater remediation activities near the Lab's southern boundary and in the North Shirley area is currently under final review and is expected to be released by the end of 1996.

The report, known as the "Responsiveness Summary" for Operable Unit I, is part of a larger document called "Action Memorandum for Operable Unit I Groundwater Removal Action/Operable Units I & III Public Water Hookups." The Responsiveness Summary documents the Department of Energy's response to all questions and comments raised during the public comment period (January 2 to March 18, 1996) and at the public meeting (January 16, 1996).

The groundwater remediation alternatives selected for Operable Unit I in-

cluded providing public water to residents in the North Shirley area, installing a pump-and-treat system (see story, above) near the Lab's southern boundary, and setting up additional groundwater monitoring wells both on- and off-site.

As described in the "Responsiveness Summary," most residents were supportive of the public water hookups and the installation of a pump-and-treat system. However, the majority of concerns expressed had to do with the size of the hookup area, air emissions, and the desire for additional information to characterize the off-site contaminants.

In response to these concerns and those of elected officials, the Department of Energy extended residential hookups further south to Sunrise Highway and east to Cranford Road. Most of the hookups have been completed (see *hookupdate*, page 10).

In response to concerns about emissions released from the air stripping stack on the pump-and-treat system, the Department of Energy approved a modification to the stack's design that will reduce the concentrations of volatile organic compounds that are emitted. The use of a carbon filter was a primary concern expressed by the public. After review by N.Y.S. Department of Environmental Conservation, it was determined that a carbon filter was not required. All emissions will be within air quality standards. The stack will be tapered at the top to a two-foot diameter to increase the velocity of the air flow as it exits the stripper. This will result in greater dispersion of air emissions.

The Department of Energy will also perform additional characterization studies as recommended in the "Engineering Evaluation and

*(continued on page 12)*



## What would you like to read in **cleanup**date ?

*cleanup*date's purpose is to provide you with information about Superfund cleanup activities at Brookhaven National Laboratory, and we'd like to know whether the newsletter is meeting your information needs. Is there something you'd like to see in *cleanup*date, but haven't? Is there something that you've seen and of which you'd like to see more? Drop us a line at: *cleanup*date, Brookhaven National Laboratory, Office of Environmental Restoration Newsletter, Bldg. 51, Upton NY 11973 (e-mail: o2b@bnl.gov).

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### 'Soils'

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tamination in North Shirley (see stories, pages 10 & 11) and Manorville, and the Glass/Chemical Holes area.

The "Operable Unit I/VI Remedial Investigation/Risk Assessment Report", documents the type and quantity of contamination found and assesses risk to the public health and environment. This report is available at the Lab's four information repositories (for locations, see page 8). The comment period on this document was from July 28 through September 30, 1996.

The "Operable Unit I/Site-Wide Radiological Soils Feasibility Study" and "Operable Unit I Proposed Plan" were submitted in early December to the three agencies overseeing the Lab cleanup. It generally takes three to five months for the three agencies (U.S. Department of Energy, U.S. Environmental Protection Agency and N.Y.S. Department of Environmental Conservation) to review and agree on the proposed cleanup alternative.

The final plan is expected to be available for public review and comment in the summer of 1997. A public notice will announce its release. ■

### Responsiveness

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Cost Analysis Report" which is available at local repositories (for locations, see page 8). The additional data will then be evaluated to verify that natural attenuation (dilution and degradation of contamina-

tion in groundwater) is taking place at the expected rate. This data and evaluation will be made available for public review and comment in the "Feasibility Study" and "Proposed Remedial Action Plan" for Operable Unit III. ■